

WHAT IS CLAIMED IS:

1. A light-emitting element driving device comprising:

a first control unit adapted to control a drive voltage applied from a voltage source to a light-emitting element;

5 a second control unit adapted to control a drive current supplied from a current source to said light-emitting element;

a test current supply unit adapted to supply a test current to the light-emitting element when the light-emitting element is switched off; and

10 a bias voltage setting unit adapted to set a bias voltage applied to the light-emitting element on the basis of a terminal voltage of the light-emitting element supplied with the test current from the test current supply unit when the light-emitting element is switched off,

15 wherein, the first control unit and the second control unit controls an light intensity of a light beam emitted from the light-emitting element.

2. The light-emitting element driving device as claimed in claim 1, wherein the second control unit controls the drive current when
20 the light intensity of light beam emitted from the light-emitting element is in control, and

wherein the first control unit sets the drive voltage in accordance with a voltage generated in the light-emitting element as a result of the control of the drive current by the second control
25 unit.

3. The light-emitting element driving device as claimed in claim 1, wherein the first control unit controls the drive voltage when the light intensity of light beam emitted from the light-emitting element is in control, and

5 wherein the second control unit sets the drive current in accordance with a current flowing in the light-emitting element as a result of the control of the drive voltage by the first control unit.

4. A light-emitting element driving device for controlling a drive voltage applied from a voltage source to a light-emitting element while
10 controlling a drive current supplied from a current source to the light-emitting element to thereby control an light intensity of a light beam emitted from the light-emitting element, the light-emitting element driving device comprising:

a bias current supply unit adapted to supply a bias current to
15 the light-emitting element;

a test current supply unit adapted to supply a test current to the light-emitting element when the light-emitting element is switched off;

a bias voltage setting unit adapted to set a bias voltage applied
20 to the light-emitting element on the basis of a terminal voltage of the light-emitting element supplied with the test current from the test current supply unit when said light-emitting element is switched off; and

a bias current setting unit adapted to set the bias current
25 supplied from the bias current supply unit to the light-emitting

element on the basis of the bias voltage set by the bias voltage setting unit when the light-emitting element is switched off.

5. The light-emitting element driving device as claimed in claim 4, wherein the bias current setting unit sets the bias current by performing negative feedback control to make the terminal voltage of the light-emitting element coincides with the bias voltage set by the bias voltage setting unit.

6. The light-emitting element driving device as claimed in claim 4, wherein the setting of the bias voltage by the bias voltage setting unit and the setting of the bias current by the bias current setting unit are performed at intervals of a predetermined cycle to thereby readjust the bias current in accordance with voltage-current characteristic change of the light-emitting element due to temperature change.

7. The light-emitting element driving device as claimed in claim 4, wherein a current source for the bias current supply unit serves also as a current source for the test current supply unit.

8. A light-emitting element driving device for controlling a drive voltage applied from a voltage source to a plurality of light-emitting elements while controlling a drive current supplied from a current source to the plurality of light-emitting elements to thereby control the light intensity of light beams emitted from the plurality of light-emitting elements, the light-emitting element driving device comprising:

a test current supply unit adapted to supply a test current to

the light-emitting element when the light-emitting element is switched off;

an arithmetic unit adapted to carry out an arithmetic operation for respective terminal voltages of the plurality of light-emitting elements supplied with the test current from the test current supply unit; and

a bias voltage setting unit for adapted to set a bias voltage applied to the plurality of light-emitting elements on the basis of a voltage value calculated by the arithmetic unit when the plurality of light-emitting elements are switched off.

9. The light-emitting element driving device as claimed in claim 8, wherein the arithmetic unit calculates the voltage value between a maximum value and a minimum value of the respective terminal voltages of the plurality of light-emitting elements and except the maximum value and the minimum value.

10. The light-emitting element driving device as claimed in claim 8, wherein the arithmetic unit calculates a plurality of voltage values and selects the voltage value of the bias voltage from the plurality of voltage values.

11. The light-emitting element driving device as claimed in claim 8, wherein the test current supply unit includes a unit common to the plurality of light-emitting elements for setting a current value of the test current.

12. A light-emitting element driving device for controlling a drive voltage applied from a voltage source to a plurality of light-emitting

elements while controlling a drive current supplied from a current source to the plurality of light-emitting elements to thereby control the light intensity of light beams emitted from the plurality of light-emitting elements, the light-emitting element driving device

5 comprising:

a bias current supply unit adapted to supply bias currents to the plurality of light-emitting elements respectively;

a test current supply unit adapted to supply a test current to the plurality of light-emitting elements when the plurality of
10 light-emitting elements are switched off;

an arithmetic unit adapted to carry out an arithmetic operation for respective terminal voltages of the plurality of light-emitting elements supplied with the test current from the test current supply unit;

15 a bias voltage setting unit adapted to set a bias voltage applied to the plurality of light-emitting elements on the basis of a voltage value calculated by the arithmetic unit when the plurality of light-emitting elements are switched off; and

a bias current setting unit adapted to set the bias currents
20 supplied from the bias current supply unit to the plurality of light-emitting elements on the basis of the bias voltage set by the bias voltage setting unit when the plurality of light-emitting elements are switched off.

13. The light-emitting element driving device as claimed in claim
25 12, wherein the bias voltage setting unit calculates a plurality of

voltage values and selects the voltage value of the bias voltage from the plurality of voltage values.

14. The light-emitting element driving device as claimed in claim 12, wherein the bias current supply unit sets the bias currents by performing negative feedback control to make each of the terminal voltages of the plurality of light-emitting elements coincides with the bias voltage set by the bias voltage setting unit.

15. The light-emitting element driving device as claimed in claim 12, wherein the setting of the bias voltage by the bias voltage setting unit and the setting of the bias currents by the bias current setting unit are performed at intervals of a predetermined cycle to thereby readjust the bias currents in accordance with voltage-current characteristic change of the plurality of light-emitting elements due to temperature change.

16. The light-emitting element driving device as claimed in claim 12, wherein a current source for the bias current supply unit serves also as a current source for the test current supply unit.

17. The light-emitting element driving device as claimed in claim 12, wherein the test current supply unit includes a unit common to the plurality of light-emitting elements for setting a current value of the test current.

18. A light-emitting element driving device comprising:

a first control unit adapted to control a drive voltage applied from a voltage source to a light-emitting element; and

a second control unit adapted to control a drive current supplied

from a current source to the light-emitting element,

wherein the first control unit and the second control unit controls an light intensity of a light beam emitted from the light-emitting element,

5 wherein the first control unit sets a voltage of the voltage source in accordance with a voltage generated in the light-emitting element as a result of the control of the drive current by the second control unit.